

ACKNOWLEDGEMENT

I am grateful to Dr. N. K. Panikkar for the guidance and encouragement I received from him.

INDIAN OCEAN BIOLOGICAL CENTRE,
NATIONAL INSTITUTE OF OCEANOGRAPHY,
ERNAKULAM,
COCHIN,

C. SANKARANKUTTY

March 14, 1969.

REFERENCES

- COSTLOW, J. D. JR. & BOOKHOUT, C. G. (1966) : Larval stages of the crab, *Pinnotheres maculatus* under laboratory conditions. *Chesapeake Sci.* 7 : 157-163.
- GURNEY, R. (1942) : Larvae of decapod Crustacea. *Ray Soc. London.*, pp. 306.
- PROVENZANO, A. J. JR. (1967) : Recent advances in the laboratory culture of decapod larvae. *Symposium on Crustacea*, Pt. II, *Marine Bio. Ass. India.*, pp. 940-945.
- SERENE, R. (1968) : The Brachyura of the Indo-West Pacific region. UNESCO—Singapore (Mimeograph).

23. STERILITY AND ABNORMAL COPULATION
BEHAVIOUR IN *AGROTIS INFUSA* (BOISD) (AGROTIDAE :
LEPIDOPTERA) IN RELATION TO HIGH TEMPERATURE

While studying the biology of *Agrotis infusa* (Boisd), the famous 'Bogong moth' (an important cutworm pest in South-eastern Australia) to determine the effect of temperature on fecundity and fertility of moths, many pairs were found unable to mate successfully and to lay fertile eggs when they were reared or were kept (with 20% sucrose solution as food) at temperatures of 29.8°C and above. The high temperature during imaginal life had more influence than that during rearing in producing sterility and abnormal copulation. In the former case, most of the males were sterile, being unable to complete spermatogenesis. In many cases copulation failed to occur. In some cases copulation started but the male was unable to transfer the spermatophore fully into the bursa copulatrix of the female and usually remained attached to the female by the partly everted spermatophore. In some cases, when the male did separate itself from the female, part of the tubular neck remained permanently everted out of the female genitalia. Such females laid only a few infertile eggs because of the failure of sperms to reach the spermatheca from the bursa-copulatrix. Exceptionally, however, when more than one spermatophore were inserted in the female during copulation and at-

least one was deposited completely in the bursa, fertile eggs were laid by such a female. The highest number of spermatophores found in a female was three, normally, however, a fertilized female contained only one spermatophore.

Out of the four females each confined with two males at 34°C, none laid any eggs. Mating failed to occur at this temperature and dissection of females after death showed that the ovaries contained only a few degenerate eggs and there was no fat body. Out of the nine females, each kept with two males at 29.8°C, two failed to oviposit and the remaining seven laid only a few infertile eggs. In some of these mating was unsuccessful as seen by the partly everted spermatophore through the female genitalia; in all others, mating failed to occur as revealed by the absence of spermatophores in the bursae of the dead females.

When the earlier stages of the pest were reared at different temperatures and the adults were kept in pairs at an optimum temperature of 22°C with food, all females that developed at 16°C and 22°C laid fertile eggs but those which developed at higher temperatures of 26°C and 29.8°C laid 30% and 66% infertile eggs, respectively.

High temperatures during rearing and particularly during imaginal life have been found to produce sterility and to result in increased percentage of infertile eggs in other Lepidoptera and this has been explained as due to degeneration of eggs and exhaustion of fat bodies in females and retardation of spermatogenesis in males.

DEPARTMENT OF ENTOMOLOGY,
J. N. KRISHI VISHWA VIDYALAYA,
JABALPUR-4,
August 17, 1970.

R. R. RAWAT

24. STUDIES ON THE BIOLOGY OF *PHYTOMYZA* *ATRICORNIS* MEIGEN (AGROMYZIDAE: DIPTERA)

Taskhir Ahmed & Gupta (1941)¹ have reported *Phytomyza atricornis* Mg. as a polyphagous pest feeding on over 72 species from 13 plant families.

During the first week of December 1966 large number of leaves of the Pea crop were found infested by the leaf miners, *Phytomyza*

¹AHMED, T. & GUPTA, R. L. (1941): The Pea leaf miner, *Phytomyza atricornis* (Meigen) in India. *Indian J. Ent.* 3: 37-49.